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APPLICATION NO.	FI	LING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/091,251	(03/05/2002	Christian Stoller	20.2732	6733
23718	7590	10/28/2003		EXAM	INER
SCHLUMBERGER OILFIELD SERVICES				HANNAHER, CONSTANTINE	
200 GILLINGHAM LANE				ART UNIT	PAPER NUMBER
MD 200-9 SUGAR LA	ND, TX	77478		2878	

DATE MAILED: 10/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

		1						
	Application No.	Applicant(s)						
Office Action Summer:	10/091,251	STOLLER ET AL.						
Office Action Summary	Examiner	Art Unit						
The MAILING DATE of this communication and	Constantine Hannaher	2878						
The MAILING DATE of this communication appears on the cov r she t with the correspond nce address Period for Reply								
A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION. - Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication. - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely. - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication. - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). - Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b). Status								
1) Responsive to communication(s) filed on	·							
2a)☐ This action is FINAL . 2b)☑ Th	is action is non-final.							
3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is								
closed in accordance with the practice under Disposition of Claims	Ex parte Quayle, 1935 C.D. 11, 4	53 O.G. 213.						
4) Claim(s) 1-43 is/are pending in the application.								
4a) Of the above claim(s) is/are withdrawn from consideration.								
5) Claim(s) is/are allowed.								
6)⊠ Claim(s) <u>1-43</u> is/are rejected.								
7) Claim(s) is/are objected to.								
8) Claim(s) are subject to restriction and/or election requirement.								
Application Papers								
9) The specification is objected to by the Examiner.								
10)⊠ The drawing(s) filed on <u>05 March 2002</u> is/are: a)⊠ accepted or b)□ objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).								
11) The proposed drawing correction filed on is: a) approved b) disapproved by the Examiner.								
If approved, corrected drawings are required in reply to this Office action.								
12) The oath or declaration is objected to by the Examiner.								
Priority under 35 U.S.C. §§ 119 and 120								
13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).								
a) ☐ All b) ☐ Some * c) ☐ None of:								
1. Certified copies of the priority documents have been received.								
2. Certified copies of the priority documents have been received in Application No								
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)). * See the attached detailed Office action for a list of the certified copies not received. 								
14)⊠ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).								
a) The translation of the foreign language provisional application has been received.								
15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.								
Attachment(s)	_							
1) Notice of References Cited (PTO-892) 2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.6+.7.8. 4) Interview Summary (PTO-413) Paper No(s) 5) Notice of Informal Patent Application (PTO-152) 6) Other:								

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DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

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2. With respect to the electronic information disclosure statement submitted November 7, 2002, evidence of consideration is not repeated.

Oath/Declaration

3. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP \$\infty\$ 602.01 and 602.02.

The oath or declaration is defective because:

The full name of each inventor (family name and at least one given name together with any initial) has not been set forth.

The signature of inventor GULRAJANI suggests a middle initial which has not been set forth.

4. When applicant sets forth the residence in the same manner as the post office address applicant's representative should keep in mind that a "residence" is a city and state or foreign country. The Office has been able to discern the city and state or foreign country of residence from the information supplied. See the requirements of 37 CFR 1.63(c)(1) as amended effective November 7, 2000.

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Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- 6. Claims 1, 3, 6, 5, 21, 24-27, 30, and 29 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Supernaw *et al.* (US005065016A).

With respect to independent claim 1, Supernaw et al. discloses a system (Fig. 1) for detecting radiation phenomena in an area surrounding a wellbore 12 traversing an earth formation 14 comprising an elongated support member S adapted for disposal within the wellbore 12 and radiation detectors 34, 36 mounted on the support member. At least one of the detectors is adapted to detect gamma ray related phenomena (column 2, lines 36-37), and at least one of the detectors is adapted to provide multiple radiation phenomena measurements (column 2, lines 40-45).

With respect to dependent claim 3, the system of Supernaw et al. further comprises a radiation source 30 mounted on the support member S.

With respect to dependent claim 6, the radiation source 30 in the system of Supernaw *et al.* comprises a source of the recited type (column 2, lines 28-33).

With respect to dependent claim 5, the support member S in the system of Supernaw et al. is adapted for disposal within the wellbore 12 after drilling of the wellbore.

With respect to independent claim 21, Supernaw et al. discloses a method corresponding to the illustrated system (Fig. 1) for detecting radiation phenomena in an area surrounding a wellbore 12 traversing an earth formation 14 comprising disposing a support member S within the wellbore 12 and having radiation detectors 34, 36 mounted thereon and detecting radiation phenomena with one

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of the radiation detectors. At least one of the detectors is adapted to detect gamma ray related phenomena (column 2, lines 36-37), and at least one of the detectors is adapted to provide multiple radiation phenomena measurements (column 2, lines 40-45).

With respect to dependent claim 24, the radiation detecting step in the method of Supernaw et al. comprises detecting gamma ray related phenomena (column 2, lines 36-37).

With respect to dependent claim 25, the support member S in the method of Supernaw et al. further comprises a radiation source 30 disposed thereon.

With respect to dependent claim 26, the radiation source 30 in the method of Supernaw et al. is a neutron source (column 2, line 15).

With respect to dependent claim 27, the method of Supernaw et al. further comprises irradiating the formation 14 with neutrons from the neutron source 30 (column 2, lines 15-17).

With respect to dependent claim 30, the neutron source 30 in the method of Supernaw et al. is adapted to emit in the recited manner (column 2, lines 28-33).

With respect to dependent claim 29, the support member S in the method of Supernaw et al. is disposed in the wellbore 12 after drilling of the wellbore.

7. Claims 1, 3, 5, 9, 13-16, 21, 24, 25, 28, 32, 36-39, and 43 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Paske *et al.* (US004829176A).

With respect to independent claim 1, Paske et al. discloses a system (Fig. 1) for detecting radiation phenomena in an area surrounding a wellbore traversing an earth formation comprising an elongated support member 10 adapted for disposal within the wellbore and radiation detectors 26, 28, 30, 32 mounted on the support member. At least one of the detectors is adapted to detect gamma ray related phenomena (column 3, lines 9-11), and at least one of the detectors being segmented to provide focused sensitivity (when considered as pairs).

With respect to dependent claim 3, the system of Paske et al. further comprises a radiation source 20 mounted on the support member 10.

With respect to dependent claim 5, the support member 10 in the system of Paske et al. is adapted for disposal within the wellbore during drilling of the wellbore.

With respect to dependent claim 9, the segmented detector in the system of Paske et al. is adapted to provide azimuthal sensitivity about the support member 10.

With respect to dependent claim 13, the support member 10 in the system of Paske *et al.* comprises a plurality of radiation detector (pairs) adapted such that their individual sensitivities are focused about differing orientations relative to the support member (column 4, lines 1-11).

With respect to dependent claim 14, the plurality of focused radiation detectors in the system of Paske *et al.* are disposed on the support member 10 such that they provide continuous azimuthal radiation detection about the support member 10 (Fig. 3).

With respect to dependent claim 15, each detector in the system of Paske *et al.* of the plurality of focused radiation detectors comprises a shielded (column 3, lines 52-57) scintillation crystal (column 3, line 62). Each shield **22**, **24** is adapted to block the passage of radiation therethrough.

With respect to dependent claim 16, each detector in the system of Paske et al. of the plurality of detectors is positioned axially proximate another one of the detectors along the support member 10 (Fig. 2).

With respect to independent claim 21, Paske et al. discloses a method corresponding to the illustrated system (Fig. 1) for detecting radiation phenomena in an area surrounding a wellbore traversing an earth formation comprising disposing a support member 10 within the wellbore and having radiation detectors 26, 28, 30, 32 mounted thereon and detecting radiation phenomena with

one of the radiation detectors. At least one of the detectors is adapted to detect gamma ray related phenomena (column 3, lines 9-11), and at least one of the detectors being segmented to provide focused sensitivity (when considered as pairs).

With respect to dependent claim 24, the radiation detecting step in the method of Paske *et al.* comprises detecting gamma ray related phenomena (column 3, lines 9-11).

With respect to dependent claim 25, the support member 10 in the method of Paske et al. further comprises a radiation source 20 disposed thereon.

With respect to dependent claim 28, the support member 10 in the method of Paske *et al.* is disposed in the wellbore during drilling of the wellbore.

With respect to dependent claim 32, the segmented detector in the method of Paske et al. is adapted to provide azimuthal sensitivity about the support member 10.

With respect to dependent claim 36, the support member 10 in the method of Paske et al. comprises a plurality of radiation detector (pairs) adapted such that their individual sensitivities are focused about differing orientations relative to the support member (column 4, lines 1-11).

With respect to dependent claim 37, the plurality of focused radiation detectors in the method of Paske *et al.* are disposed on the support member 10 such that they provide continuous azimuthal radiation detection about the support member 10 (Fig. 3).

With respect to dependent claim 38, each detector in the method of Paske *et al.* of the plurality of focused radiation detectors comprises a shielded (column 3, lines 52-57) scintillation crystal (column 3, line 62). Each shield **22**, **24** is adapted to block the passage of radiation therethrough.

With respect to dependent claim 39, each detector in the method of Paske *et al.* of the plurality of detectors is positioned axially proximate another one of the detectors along the support member 10 (Fig. 2).

With respect to dependent claim 43, to the extent understood since it is not a mandate of claim 21 that there be *any* multiple measurement detector, nevertheless at least one of the detectors of the method of Paske *et al.* is adapted to detect gamma rays.

Claim Rejections - 35 USC § 103

- 8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
 - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- 9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
- 10. Claims 2, 19, 20, 22, 42, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Supernaw et al. (US005065016A) in view of Humphrey (US003539806A).

With respect to dependent claim 2, the detector adapted to provide multiple radiation phenomena measurements in the system of Supernaw et al. arranges the individual detectors 40

symmetrically. Humphrey shows that it is known to provide multiple measurements (to photomultipliers 1a, 2a, 3a, 4a, 5a, and 6a) with a detector which comprises a radiation detector (inorganic single crystal 7) disposed within another radiation detector (organic scintillator dissolved in plastic with sections 1-6). In view of the directionality afforded by the arrangement suggested by Humphrey, which would have been useful in the determination of the location of brine flow in the system of Supernaw *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Supernaw *et al.* to comprise a detector of the type suggested by Humphrey.

With respect to dependent claim 19, although the detectors suggested by Supernaw et al. and Humphrey are adapted to detect gamma rays, it is routine to provide at least one detector adapted to detect neutrons of some type, especially when the source 30 is a neutron source, as a way to check on the operation of the source or to make known evaluations of the wellbore and/or formation. Accordingly, it would have been obvious to modify the system suggested by Supernaw et al. and Humphrey to comprise a multiple measurement detector adapted to detect thermal or epithermal neutrons in order to check on the operation of source 30 or to further evaluate the wellbore and/or formation. The provision of neutron detection with scintillators using specific isotopes, for example, is so well known as to require no citation.

With respect to dependent claim 20, the detectors suggested by Supernaw et al. and Humphrey are adapted to detect gamma rays.

With respect to dependent claim 22, the detector adapted to provide multiple radiation phenomena measurements in the method of Supernaw *et al.* arranges the individual detectors 40 symmetrically. Humphrey shows that it is known to provide multiple measurements (to photomultipliers 1a, 2a, 3a, 4a, 5a, and 6a) with a detector which comprises a radiation detector

(inorganic single crystal 7) disposed within another radiation detector (organic scintillator dissolved in plastic with sections 1-6). In view of the directionality afforded by the arrangement suggested by Humphrey, which would have been useful in the determination of the location of brine flow in the method of Supernaw *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Supernaw *et al.* to comprise a detector of the type suggested by Humphrey.

With respect to dependent claim 42, to the extent understood since it is not a mandate of claim 21 that there be *any* multiple measurement detector, although the detectors suggested by Supernaw *et al.* and Humphrey are adapted to detect gamma rays, it is routine to provide at least one detector adapted to detect neutrons of some type, especially when the source 30 is a neutron source, as a way to check on the operation of the source or to make known evaluations of the wellbore and/or formation. Accordingly, it would have been obvious to modify the method suggested by Supernaw *et al.* and Humphrey to comprise a multiple measurement detector adapted to detect thermal or epithermal neutrons in order to check on the operation of source 30 or to further evaluate the wellbore and/or formation. The provision of neutron detection with scintillators using specific isotopes, for example, is so well known as to require no citation.

With respect to dependent claim 43, the detectors suggested by Supernaw et al. and Humphrey are adapted to detect gamma rays.

11. Claims 4 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Supernaw et al. (US005065016A).

With respect to dependent claim 4, although the detectors suggested by Supernaw et al. are adapted to detect gamma rays, it is routine to provide at least one detector adapted to detect neutrons of some type, especially when the source 30 is a neutron source, as a way to check on the

operation of the source or to make known evaluations of the wellbore and/or formation.

Accordingly, it would have been obvious to modify the system suggested by Supernaw *et al.* to comprise a multiple measurement detector adapted to detect neutron related phenomena in order to check on the operation of source 30 or to further evaluate the wellbore and/or formation. The provision of neutron detection with scintillators using specific isotopes, for example, is so well known as to require no citation.

With respect to dependent claim 23, although the detectors suggested by Supernaw et al. are adapted to detect gamma rays, it is routine to provide at least one detector adapted to detect neutrons of some type, especially when the source 30 is a neutron source, as a way to check on the operation of the source or to make known evaluations of the wellbore and/or formation.

Accordingly, it would have been obvious to modify the method suggested by Supernaw et al. to comprise a multiple measurement detector adapted to detect neutron related phenomena in order to check on the operation of source 30 or to further evaluate the wellbore and/or formation. The provision of neutron detection with scintillators using specific isotopes, for example, is so well known as to require no citation.

12. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Supernaw et al. (US005065016A) in view of Stoller et al. (US005841135A).

With respect to dependent claim 7, Stoller et al. shows that it is known to use a radiation source comprising an x ray source (column 6, lines 56-57) in a system for detecting radiation phenomena in an area surrounding a wellbore traversing an earth formation wherein at least one of the detectors is adapted to detect gamma ray related phenomena. In view of the opportunity for evaluating different aspects of the wellbore and/or formation, it would have been obvious to one of

13. Claims 8 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Supernaw et al. (US005065016A) in view of Pauley et al. (US005191210A).

With respect to dependent claim 8, the provision of a marker material of the type recited is known from Pauley et al. In view of the ability to measure velocity and volume and the like as described by Pauley et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Supernaw et al. to further comprise such a marker material.

With respect to dependent claim 31, the provision of a marker material of the type recited is known from Pauley et al. In view of the ability to measure velocity and volume and the like as described by Pauley et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Supernaw et al. to further comprise such a marker material.

14. Claims 9-12 and 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Supernaw et al. (US005065016A) in view of Williams (US004743755A).

With respect to dependent claim 9, to the extent understood since it is not a mandate of claim 1 that any detector be segmented, nevertheless the detector (e.g., 34) in the system of Supernaw et al. is segmented (Fig. 3). Williams shows explicitly (by comparison with Fig. 1 therein) that it is an improvement on the detector of Supernaw et al. to provide focused sensitivity, and specifically azimuthal sensitivity about a support member 10, using a segmented detector as disclosed therein. In view of the improved ability to determine the location of flows as described by Williams, it would

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have been obvious to one of ordinary skill in the art at the time the invention was made to modify the segmented detector in the system of Supernaw et al. to provide azimuthal sensitivity.

With respect to dependent claims 10-12, the segmented detector suggested by Williams comprises scintillation material segments 57, barrier material 55, and multiplier 58 in the recited arrangements.

With respect to dependent claim 32, to the extent understood since it is not a mandate of claim 21 that any detector be segmented, nevertheless the detector (e.g., 34) in the method of Supernaw et al. is segmented (Fig. 3). Williams shows explicitly (by comparison with Fig. 1 therein) that it is an improvement on the detector of Supernaw et al. to provide focused sensitivity, and specifically azimuthal sensitivity about a support member 10, using a segmented detector as disclosed therein. In view of the improved ability to determine the location of flows as described by Williams, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the segmented detector in the method of Supernaw et al. to provide azimuthal sensitivity.

With respect to dependent claims 33-35, the segmented detector suggested by Williams comprises scintillation material segments 57, barrier material 55, and multiplier 58 in the recited arrangements.

Claims 17, 18, 40, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over 15. Paske et al. (US004829176A).

With respect to dependent claim 17, the choice of shape for the scintillation crystals in the system of Paske et al. is one within the ordinary skill in the art consistent with the requirements of the support member diameter (space) and the arrangement (performance). Cylindrical scintillation crystals are a routine item of commerce.

With respect to dependent claim 18, each shield in the system of Paske *et al.* defines an arc of 360 degrees which encompasses the claimed value. Note further that the structure of the support member may be considered as defining an arc of specifically 90 degrees.

With respect to dependent claim 40, the choice of shape for the scintillation crystals in the method of Paske *et al.* is one within the ordinary skill in the art consistent with the requirements of the support member diameter (space) and the arrangement (performance). Cylindrical scintillation crystals are a routine item of commerce.

With respect to dependent claim 41, each shield in the method of Paske et al. defines an arc of 360 degrees which encompasses the claimed value. Note further that the structure of the support member may be considered as defining an arc of specifically 90 degrees.

Response to Submission(s)

16. The papers filed on May 31, 2002 (certificate of mailing dated May 21, 2002) have not been made part of the permanent records of the United States Patent and Trademark Office (Office) for this application (37 CFR 1.52(a)) because of damage from the United States Postal Service irradiation process. The above-identified papers, however, were not so damaged as to preclude the USPTO from making a legible copy of such papers. Therefore, the Office has made a copy of these papers, substituted them for the originals in the file, and stamped that copy:

COPY OF PAPERS ORIGINALLY FILED

If applicant wants to review the accuracy of the Office's copy of such papers, applicant may either inspect the application (37 CFR 1.14(d)) or may request a copy of the Office's records of such papers (i.e., a copy of the copy made by the Office) from the Office of Public Records for the fee specified in 37 CFR 1.19(b)(4). Please do **not** call the Technology Center's Customer Service Center to inquiry about the completeness or accuracy of Office's copy of the above-identified papers, as the Technology Center's Customer Service Center will **not** be able to provide this service.

If applicant does not consider the Office's copy of such papers to be accurate, applicant must provide a copy of the above-identified papers (except for any U.S. or foreign patent documents submitted with the above-identified papers) with a statement that such copy is a complete and

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accurate copy of the originally submitted documents. If applicant provides such a copy of the above-identified papers and statement within **THREE MONTHS** of the mail date of this Office action, the Office will add the original mailroom date and use the copy provided by applicant as the permanent Office record of the above-identified papers in place of the copy made by the Office. Otherwise, the Office's copy will be used as the permanent Office record of the above-identified papers (*i.e.*, the Office will use the copy of the above-identified papers made by the Office for examination and all other purposes). This three-month period is not extendable.

17. This application has been published as US2002/0153481A1 on October 24, 2002.

Conclusion

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Constantine Hannaher whose telephone number is (703) 308-4850. The examiner can normally be reached on Monday-Friday with flexible hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (703) 308-4852. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ch

constantine Hannaher Primary Examiner